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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Widening of Shiva Mandira Temple Road from Major Sandeep Unnikrishnan Road to Yelahanka Industrial Area in ward No.03
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	**Sri.Uday shetty**
Date of Testing	:	18/01/2017
Type of Mix	:	BC
Sample I/D	:	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	538.00	550.00
2. Weight of Mixture after extraction, g	509.00	521.00
3. Weight of Bitumen	29.00	29.00
4. Weight of filter paper before extraction, g	4.00	4.00
5. Weight of filter paper after extraction, g	6.00	6.00
6. Weight of fines, g	2.00	2.00
7. Weight of Bitumen & fines	31.00	31.00
8. Bitumen content in %	5.76	5.64
9. Average Bitumen content in %	**5.70**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	8/12/2016
		Date of testing:	9/12/2016
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	509.0

IS Sieve size in mm	Weight retained(gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	61	61.0	11.98	88.02	79 - 100
9.50	80	141.0	27.70	72.30	71 - 95
4.75	88	229.0	44.99	55.01	53 - 71
2.360	55	284.0	55.80	44.20	42 - 58
1.180	39	323.0	63.46	36.54	34 - 48
0.600	38	361.0	70.92	29.08	26 - 38
0.300	41	402.0	78.98	21.02	18 - 28
0.150	31	433.0	85.07	14.93	12 - 20
0.075	40	473.0	92.93	7.07	4 - 10
Pan	36.0				
Total	509.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	Widening of Shiva Mandira Temple Road from Major Sandeep Unnikrishnan Road to Yelahanka Industrial Area in ward No.03
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	**Sri.Uday shetty**
Date of Testing	:	18/01/2017
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	955.00	500.00
2. Weight of Mixture after extraction, g	902.00	474.00
3. Weight of Bitumen	53.00	26.00
4. Weight of filter paper before extraction, g	4.00	4.00
5. Weight of filter paper after extraction, g	5.00	6.00
6. Weight of fines, g	1.00	2.00
7. Weight of Bitumen & fines	54.00	28.00
8. Bitumen content in %	5.65	5.60
9. Average Bitumen content in %	**5.63**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	23/01/2017
		Date of testing:	23/01/2017
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	902.0

IS Sieve size in mm	Weight retained(gm)	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	86	86.0	9.53	90.47	79 - 100
9.50	165	251.0	27.83	72.17	71 - 95
4.75	155	406.0	45.01	54.99	53 - 71
2.360	107	513.0	56.87	43.13	42 - 58
1.180	68	581.0	64.41	35.59	34 - 48
0.600	69	650.0	72.06	27.94	26 - 38
0.300	73	723.0	80.16	19.84	18 - 28
0.150	51	774.0	85.81	14.19	12 - 20
0.075	81	855.0	94.79	5.21	4 - 10
Pan	47.0				
Total	902.0				

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Name of Work	:	Widening of Shiva Mandira Temple Road from Major Sandeep Unnikrishnan Road to Yelahanka Industrial Area in ward No.03
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Shri Uday shetty
Date of Testing	:	9/1/2017
Type of Mix	:	WMM
Sample I/D	:	WMM A

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location: At plant

Date of Sampling: 9/1/2017

Date of testing: 9/1/2017

Type of material & Purpose: WMM

Oven Dry Wt.(gms): 10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	115	115	1.15	98.85	95-100
22.4	2250	2365	23.65	76.35	60-80
11.2	2676	5041	50.41	49.59	40-60
4.75	1358.0	6399	63.99	36.01	25-40
2.36	877.0	7276	72.76	27.24	15-30
0.6	578.0	7854	78.54	21.46	8.0-22.0
0.075	1664.0	9518	95.18	4.82	0-8
Pan	482.0				
Total	10000.0				

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Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri.Uday shetty

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	DBM	Proposed Use	DBM
Sample Location	At plant	Date of Sampling	12/1/2017
Source of Material		Date of Testing	12/1/2017

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	8752	974	7778	512
31.5	25.0	4653	800	3853	431
25.0	20.0	2653	450	2203	274
20.0	16.0	1205	313	892	254
16.0	12.5	519	123	396	94
12.5	10.0	246	73	173	48
10.0	6.3	106	53	53	31
Total		**18134**	**2786**	**15348**	**1644**

Results

Flakiness Index(%):	15.36
Elongation Index(%):	10.71
Combined FI+EL (%)	26.07

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Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri.Uday shetty

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	DBM	Proposed Use	DBM
Sample Location	At plant	Date of Sampling	12/1/2017
Source of Material		Date of Testing	12/1/2017

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7541	856	6685	525
31.5	25.0	4510	755	3755	354
25.0	20.0	2713	545	2168	236
20.0	16.0	2352	407	1945	211
16.0	12.5	615	219	396	143
12.5	10.0	255	101	154	34
10.0	6.3	93	56	37	26
Total		18079	2939	15140	1529

Results

Flakiness Index(%):	16.26
Elongation Index(%):	10.10
Combined FI+EL (%)	26.36

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Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri.Uday shetty

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Proposed Use	DBM	Date of Sampling		12/1/2017
Sample Location	At plant	Date of Testing		12/1/2017

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	323.00	331.00	322.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	254.00	256.00	261.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	69.00	75.00	61.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	21.36	22.66	18.94	
5	Average Aggregate impact value	(%)	20.99			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

Contractor's Representative

Department Engineer (AE/JE)

Consultant's Representative

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Client	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	M/s Tejus Consultants
Contractor	Sri.Uday shetty

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Proposed Use	DBM	Date of Sampling		12/1/2017
Sample Location	At plant	Date of Testing		12/1/2017

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	318.00	321.00	326.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	243.00	252.00	246.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	75.00	69.00	80.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	23.58	21.50	24.54	
5	Average Aggregate impact value	(%)	23.21			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

Contractor's Representative

Department Engineer (AE/JE)

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Consultant's Representative

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Consultant	M/s Tejus Consultants
Contractor	Sri.Uday shetty

AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Proposed Use	DBM	Date of Sampling		12/1/2017
Sample Location	At plant	Date of Testing		12/1/2017

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	343.00	352.00	376.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	269.00	263.00	272.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	74.00	89.00	104.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	21.57	25.28	27.66	
5	Average Aggregate impact value	(%)	24.84			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

Contractor's Representative | Department Engineer (AE/JE) | Consultant's Representative

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Client	:	**BRUHAT BANGALORE MAHANAGARA PALIKE**
Consultant	:	**M/s Tejus Consultants**
Contractor	:	**Sri.Uday shetty**
Date of Testing	:	12/1/2017
Type of Mix	:	DBM
Sample I/D	:	1

GRADATION FOR DBM
(As per MORT&H 500-10,Grading-2)

Sample Location: At plant
Date of Sampling: 12/1/2017
Date of testing: 12/1/2017
Type of material & Purpose: DBM
Oven Dry Wt.(gms): 1350.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	80	80	5.93	94.07	90-100
19.00	146	226	16.74	83.26	71-95
13.20	115	341	25.26	74.74	56-80
4.750	389	730	54.07	45.93	38-54
2.360	185	915	67.78	32.22	28-42
0.300	315	1230	91.11	8.89	7-21
0.075	75	1305	96.67	3.33	2-8
Pan	45				
Total	1350.0				

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Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri.Uday shetty
Date of Testing	:	12/1/2017
Type of Mix	:	DBM
Sample I/D	:	1

GRADATION FOR DBM
(As per MORT&H 500-10,Grading-2)

Sample Location: At plant
Date of Sampling: 12/1/2017
Date of testing: 12/1/2017
Type of material & Purpose: DBM
Oven Dry Wt.(gms): 1350.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	80	80	5.93	94.07	90-100
19.00	146	226	16.74	83.26	71-95
13.20	115	341	25.26	74.74	56-80
4.750	389	730	54.07	45.93	38-54
2.360	185	915	67.78	32.22	28-42
0.300	315	1230	91.11	8.89	7-21
0.075	75	1305	96.67	3.33	2-8
Pan	45				
Total	1350.0				

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Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri.Uday shetty
Date of Testing	:	12/1/2017
Type of Mix	:	DBM
Sample I/D	:	2

GRADATION FOR DBM
(As per MORT&H 500-10,Grading-2)

Sample Location: At plant
Date of Sampling: 12/1/2017
Date of testing: 12/1/2017
Type of material & Purpose: DBM
Oven Dry Wt.(gms): 1150.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	86	86	7.48	92.52	90-100
19.00	99	185	16.09	83.91	71-95
13.20	115	300	26.09	73.91	56-80
4.750	391	691	60.09	39.91	38-54
2.360	135	826	71.83	28.17	28-42
0.300	156	982	85.39	14.61	7-21
0.075	87	1069	92.96	7.04	2-8
Pan	81				
Total	1150.0				

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Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri.Uday shetty
Date of Testing	:	12/1/2017
Type of Mix	:	DBM
Sample I/D	:	3

GRADATION FOR DBM
(As per MORT&H 500-10,Grading-2)

Sample Location: At plant
Date of Sampling: 12/1/2017
Date of testing: 12/1/2017
Type of material & Purpose: DBM
Oven Dry Wt.(gms): 1000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
37.50	0	0	0.00	100.00	100.00
26.50	55	55	5.50	94.50	90-100
19.00	145	200	20.00	80.00	71-95
13.20	121	321	32.10	67.90	56-80
4.750	285	606	60.60	39.40	38-54
2.360	75	681	68.10	31.90	28-42
0.300	155	836	83.60	16.40	7-21
0.075	123	959	95.90	4.10	2-8
Pan	41				
Total	1000.0				

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Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri.Uday shetty
Date of Testing	:	13/01/17
Type of Mix	:	Tack coat
Sample I/D	:	1

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.75	0.751
Final weight of plate after application of tack Coat (c)	Kg	0.772	0.775
Weight of tack Coat (d=c-b)	Kg	0.02	0.024
Rate of spread of tack coat	Kg/sq.m	0.24	0.27
Average	Kg/sq.m	0.256	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri.Uday shetty
Date of Testing	:	13/01/17
Type of Mix	:	Tack coat DBM
Sample I/D	:	2

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.772	0.765
Final weight of plate after application of tack Coat (c)	Kg	0.796	0.787
Weight of tack coat (d=c-b)	Kg	0.024	0.022
Rate of spread of tack coat	Kg/sq.m	0.267	0.244
Average	Kg/sq.m	0.256	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	Sri.Uday shetty
Date of Testing	:	13/01/17
Type of Mix	:	Tack coat DBM
Sample I/D	:	3

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.770	0.770
Final weight of plate after application of tack Coat (c)	Kg	0.794	0.791
Weight of tack coat (d=c-b)	Kg	0.024	0.021
Rate of spread of tack coat	Kg/sq.m	0.267	0.233
Average	Kg/sq.m	0.250	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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